

REMARKS

This amendment is submitted in response to the office action mailed October 16, 2003. Favorable reconsideration of the application, as amended, is respectfully requested.

Claims 8-10, 53 and 55 were rejected under 35 U.S.C. 103(a) as being unpatentable over Iwasaki et al. (U.S. 4,107,375) in view of Gehrke et al. (U.S. 6,039,914) or Yap et al. (U.S. 6,037,398). Iwasaki et al. discloses a bulky asphalt-impregnated sheet having different properties on both surfaces. The bulky sheet is a nonwoven fabric made of filaments twisted with each other, usually by a needle-punch process. The examples disclose a nonwoven fabric of polypropylene having 15 denier, 400 g/m² density, and 4 mm thickness.

Applicants respectfully submit that the amended claims are nonobvious in view of Iwasaki et al. Independent claims 8 and 53 have been amended to state that the roofing material is made with a nonwoven mat of glass fibers. As described in the specification at page 1, lines 18-20 and page 8, lines 1-6, this is a conventional asphalt roofing mat. In contrast, Iwasaki et al. teaches that a roofing material having different properties on the top and bottom surfaces cannot be obtained without using the bulky sheet of twisted filaments. They explicitly teach that a roofing material having different properties on both side surfaces cannot be obtained using a conventional base material made of nonwoven fabric of synthetic fibers (col. 1, lines 42-68). The present invention uses a conventional base mat made of nonwoven fabric of synthetic fibers (glass fibers). Thus, Iwasaki et al. teaches away from the present invention. In view of the above, it is submitted that the present invention is nonobvious even if Iwasaki et al. is combined with a reference disclosing a coating that passes the claimed weathering performance test.

Gehrke et al. discloses background information on conventional asphalt roofing shingles at col. 5, line 39 to col. 6, line 14. The patent states that roofing asphalts are obtained by air-blowing a refined petroleum residual. Saturating asphalts must possess a low viscosity in order for the felt to become thoroughly saturated. Coating asphalts must have good weather-resistant qualities and possess a high fusion temperature in order that there will be no flowing of the asphalt after application to the roof. Consequently, the coating asphalt is air-blown for a much longer time than the saturating asphalt. The patent states that it is known in the industry that the addition of 30 to 40 percent of finely ground mineral filler to the coating asphalt greatly improves its weathering qualities.

The disclosure by Gehrke et al. clearly neither teaches nor suggests an asphalt-based coating that passes the weathering performance test recited in the present claims. Gehrke et al. is merely describing conventional asphalt roofing shingles. It is known in the industry that

most roofing shingles are made with an air-blown coating asphalt containing a mineral filler. However, using an air-blown coating asphalt and a mineral filler is not enough to pass the claimed weathering performance test. Applicants have found ways to further engineer the coating so that it passes the test. As described at page 11, line 27 to page 12, line 2, and at page 13, lines 1-5, one way to engineer the coating is to make the top surface layer of the coating with an asphalt having excellent weathering performance, such as Alaska North Slope crude, and to make the lower portion of the coating with an asphalt having poorer weathering performance, such as California crude. Gehrke et al. neither teaches nor suggests any way to engineer a conventional coating to make it more weather resistant. Rather, Gehrke et al. only describes a conventional coating. Therefore, it is submitted that the present invention is not obvious over Iwasaki et al. in view of Gehrke et al. even if the teachings of the patents are combined. Applicants also submit that there is no motivation to combine the patents, because Iwasaki et al. teaches away from conventional roofing materials.

Yap et al. discloses a modified asphalt roofing composition adapted for cold application to a roofing membrane on the roof. The composition contains 10-50% solvent, 10-90% asphalt, 1-40% aluminum leaf, 0.5-5% SBR or SBS rubber, 10-30% inert filler, and 0-25% inert fibers. The composition is said to have improved reflective and weathering properties. Applicants respectfully submit that it would not be obvious to combine the teachings of Yap et al. with those of Iwasaki et al. Iwasaki et al. discloses a process in which a bulky sheet is passed through a bath of molten asphalt to saturate the sheet and coat both sides of the sheet. This is the type of process typically used to make roofing shingles. In contrast, Yap et al. discloses a more fluid composition containing a substantial amount of solvent, of the type which is spread on top of a membrane on a roof. The composition is so fluid that it can be applied cold. The composition disclosed in Yap et al. would not be suitable for application to the bulky sheet as described in Iwasaki et al., because it would run off the sheet instead of adequately saturating and coating it. Iwasaki et al. could not produce a product having coatings with different properties on both sides using the composition disclosed in Yap et al.

Claims 8-10, 53 and 55 were also rejected under 35 U.S.C. 102(b) as being anticipated by Miller et al. (WO 00/40794). Miller et al. discloses an asphalt-based roofing material including a substrate coated with an asphalt coating. The asphalt coating includes an upper region 76 above the substrate, and a lower region 78 below the substrate. A protective coating is adhered to the upper surface of the asphalt coating. The protective coating is

described at page 10, line 27 to page 11, line 14. The protective coating is typically a polymeric adhesive, but it can also be an "asphalt-based polymeric material".

Applicants respectfully submit that the amended claims are novel and nonobvious in view of Miller et al. Independent claims 8 and 53 have been amended to state that the asphalt-based coating includes asphalt and from about 30% to about 75% filler by weight of the coating. The purpose of this amendment is to indicate that the asphalt-based coating is a typical roofing material coating except that it is engineered to improve its weathering performance in at least the top surface layer. As described at page 11, line 27 to page 12, line 2, and at page 13, lines 1-5, one way to engineer the coating is to make the top surface layer of the coating with an asphalt having excellent weathering performance, such as Alaska North Slope crude, and to make the lower portion of the coating with an asphalt having poorer weathering performance, such as California crude.

In contrast, Miller et al. adheres a layer of "protective coating" on top of the typical asphalt-based coating. The purpose of the protective coating to cause greater adhesion of the roofing granules so that they do not come loose from the roofing material when hit by hailstones. The protective coating is typically a hot melt polymeric adhesive. There is no suggestion in Miller et al. to add a filler to the protective coating, particularly not from about 30% to about 75% filler. The addition of a filler to the protective coating would reduce the adhesive properties of the protective coating. This would be contrary to the purpose of using the protective coating.

It is submitted that dependent claims 10 and 55 are further distinguishable from Miller et al. These claims state that the entire top portion of the coating passes the weathering performance test. The "top portion" is defined as the portion extending from the mat to the top surface of the roofing material (Fig. 2 and page 12, lines 3-12). In contrast, Miller et al. only apply a layer of the protective coating on the top surface of the asphalt coating. The protective coating does not extend down to the mat. Miller et al. would have no motivation to extend the protective coating down to the mat, because the purpose of the protective coating is to more strongly adhere the roofing granules to the top surface so that they do not come loose when hit by hailstones. Extending the protective coating down to the mat would be unnecessary, and it would increase the cost of the roofing material.

The prior art made of record and not relied upon has been considered by Applicants' attorney, but it is not considered to be any more pertinent than the above-described patents.

In view of the above, Applicants respectfully submit that the claimed invention is patentable over the prior art.